Speech disorders

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Speech disorders

**DYSPHONIA**

1. Vocal cord muscle paralysis / fatigability
2. Spasmodic dysphonia

**DYSARTHRIA**

1. Lower motor neuron (flaccid dysarthria)
2. Upper motor neuron (spastic dysarthria)
3. Cerebellar (ataxic dysarthria)
4. Extrapyramidal (hypo- / hyper-kinetic dysarthria)
5. Mixed dysarthria

Speech Testing

**CN7** – pronounce **labial sounds** – M, B, P. “Say 'baby hippopotamus'”

**CN12** – pronounce **lingual sounds** – T, D, L. “Say 'yellow lorry'”

**CN10** – ask patient to cough and to say 'Aaah' (**palatal sounds**)

Ask the patient to count steadily to 30 - to assess for *muscle fatigue*.

Therapy

* + generally focuses on teaching *compensatory strategies* and *self-correction of errors*.
  + *exercises of* oral, lingual, buccal, and laryngeal *musculature* may increase physiologic support for speech.

Dysphonia

* inability to vocalize (loss of voice - breathy sound);
* due to **disorder of larynx or its innervation** (abnormal apposition of vocal cords).

VOCAL CORD DYSFUNCTION / PARALYSIS

1. Laryngitis
2. Damage to superior laryngeal nerve
3. Nodules, polyps, carcinoma.
4. Muscle paralysis or fatigability (after excessive speaking).

SPASMODIC DYSPHONIA

- **dystonic spasms** of laryngeal muscles:

1. ***adductor type*** (most common form) - voice is strained (effortful, strangulated), high-pitched, punctuated by repetitive brief interruptions of speech.

H: botulinum toxin injection into thyroarytenoid muscle

1. ***abductor type*** - voice has whispering, breathy quality.

H: botulinum toxin injection into posterior cricoarytenoid or cricothyroid muscles - technically more difficult → less satisfactory results

* patient may employ certain ***"tricks" to briefly overcome dystonia***, presumably by using other motor pathways to accomplish desired movement (e.g. some patients may find their voice nearly normal when singing or shouting).
* cause - basal ganglia dysfunction.
* rare nonprogressive syndrome.
* occurs in middle aged - elderly individuals.

Dysarthria

- **lack of motor control over peripheral speech organs** – consistent disturbance in ***articulation*** of individual sounds:

1. labials (n. facialis) – M, B, P
2. gutturals (n. vagus)
3. linguals (n. hypoglossus) – T, D, L

FLACCID dysarthria (s. LMN dysarthria, bulbar paralysis)

* speech is slurred and progressively less distinct.
* special difficulty in **vibrative letters** (such as "R").
* bilateral palate paralysis → ***nasal quality*** speech.
* vocal cord paralysis → ***raspy quality*** speech.
* facial diplegia → impaired **labials**.
* tongue paralysis → impaired **linguals**.
* in myasthenia gravis speech worsens as patient continues to speak.

SPASTIC dysarthria (s. UMN dysarthria, pseudobulbar paralysis)

* harsh, low-pitched, slow, monotonous verbal output that sounds strained or strangled (“Donald Duck” speech).
* may occur with *nonfluent aphasia* (particularly Broca aphasia).

ATAXIC dysarthria

- **cerebellar** disease.

* slowness of speech, altered rhythm, irregular breakdowns, improper stress - uneven, jumpy (staccato), unpredictable output.
* disturbed *speech & respiration coordination*:
  1. not enough breath to utter certain words or syllables.
  2. greater strength than intended (***explosive speech***).
* scanning speech - ***disrupted prosodic quality*** - slow, deliberate, segmented (unnatural separation of syllables), monotonous speech;
* normal grammatical and semantic competence, normal articulation;
* lesion at **decussation of brachium conjunctivum** in mesencephalon (crossed efferent cerebellar pathways).
* part of **Charcot triad** [ataxia, nystagmus, scanning speech] - historically considered to be pathognomonic for *multiple sclerosis*, but more common with *head injuries*.

HYPOKINETIC / HYPERKINETIC dysarthria

- **extrapyramidal** disease.

1. **Hypokinetic dysarthria** (Parkinson and other rigid types of extrapyramidal disorders) - rapid utterances, word slurring, decrescendo volume at ends of sentences; voice is low pitched and monotonous, lacking both inflection and volume (hypokinetic and hypophonic); in advanced states only whispering is possible.
2. **Hyperkinetic dysarthria**:
3. ***choreiform dysarthria*** (choreiform disorders, myoclonic disorders) - bursting speech: prolonged phoneme and sentence segments, intermixed with silences; variable, often improper, stress (phoneme inflections).
4. ***dystonic dysarthria*** (in dystonia musculorum deformans) - slower rate, prolongation of individual phonemes and segments; unexpected appearances of stress or silence.

MIXED dysarthrias

* combination of spastic, flaccid, ataxic, and hypokinetic / hyperkinetic dysarthrias.
* common (e.g. multiple sclerosis, Wilson's disease, advanced amyotrophic lateral sclerosis).

Mutism

- total loss of speech.

1) most often involves **upper motor neurons**.

* **aphasic** patients frequently present with *initial mutism*.
* *persistent mutism* is associated with bihemispheric involvement (particularly of mesial **frontal lobes**).
* **bilateral dysfunction of upper brain stem or frontal septal area** – lost initiation of both behavior and verbal output (akinetic mutism).

2) mutism can also be **psychogenic**.

Speech-Related Disorders

1. Phonic tics and vocalization
2. Reiterative speech:
   1. Echolalia
   2. Palilalia
   3. Stuttering
   4. Logoclonia

Phonic Tics & Vocalizations

- involuntary sounds:

* + 1. **Simple vocal tics** - similar in character to motor tics (inarticulate noises and sounds - throat clearing, grunts, coughs, shouts, snorts, word accentuation).
    2. **Complex vocal tics** - articulate words, phrases, sentences (e.g. echolalia, coprolalia).

Etiology:

1. Gilles de la Tourette syndrome.
2. Degenerative diseases of nervous system (e.g. neuroacanthocytosis, Huntington's disease)
3. Neuroleptic medication.

Reiterative Speech Disturbances

[*angl*. **reiterative** – kartotinis]

##### Echolalia

- mandatory tendency to **repeat what has just been said by examiner**.

* fully developed echolalia encompasses *entire phrases and sentences*.
* patient apparently ***unaware*** of what he or she is saying.
* most have completion phenomenon - if started on phrase that is not completed (red, white, and \_\_\_\_\_\_\_\_\_\_), correct word is supplied by patient automatically.
* most often encountered in **transcortical aphasias** (esp. transcortical sensory and mixed transcortical); also in many **degenerative brain diseases**.

##### Palilalia

- involuntary **repetition of words / phrases during verbal output**.

Etiologic associations:

1. some aphasias.
2. basal ganglia involvement
3. untreated schizophrenia
4. paramedian thalamic damage
5. later stages of degenerative brain diseases (e.g. Alzheimer's disease)
6. electrical stimulation of left hemisphere sites.

##### Logoclonia

- tendency to **repeat final syllable of word**.

* indicates bilateral brain dysfunction (e.g. later stages of dementia).

##### Stutter

- difficulty in producing smooth flow of speech - multiple rapid **iteration of uttered partial-word** (not whole word!)

* associated with ***right cerebral dominance*** and ***widespread* *overactivity* *of* cerebral cortex & cerebellum**.
* includes overactivity of ***supplementary motor area*** (stimulation of this area produces **laughter,** with duration and intensity proportionate to stimulus intensity).

1. **Developmental stutter** - common (particularly among *developing males*; accompanied by physical & emotional discomfort) - involuntary repetition of ***first syllable*** of word; initiation of word is followed by:
2. machine gun-like repetition (stutter)
3. prolonged silence (stammer).
   * by late childhood, many children recover from stuttering.
4. **Acquired stutter** - repetitions and prolongations ***not restricted to initial syllable***; patient does not exhibit anxiety associated with difficult performance - bilateral brain dysfunction (no focal neuroanatomical site).

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